Dec. 15, 1936. E. ROBERTS 2,064,766

CENTRIFUGAL DISCHARGER

Filed July 22, 1935

Fig. 3

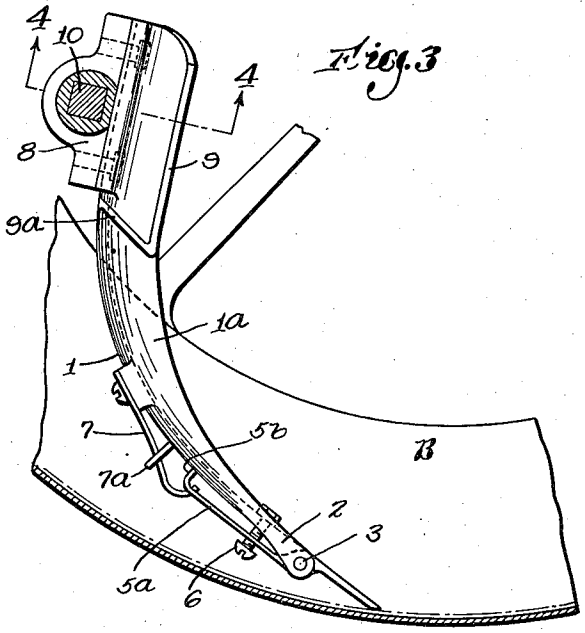


Fig. 4.

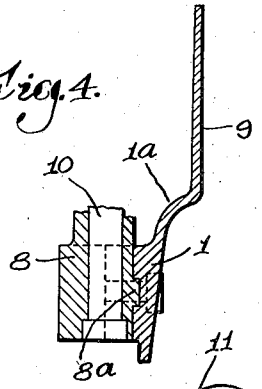


Fig. 2.

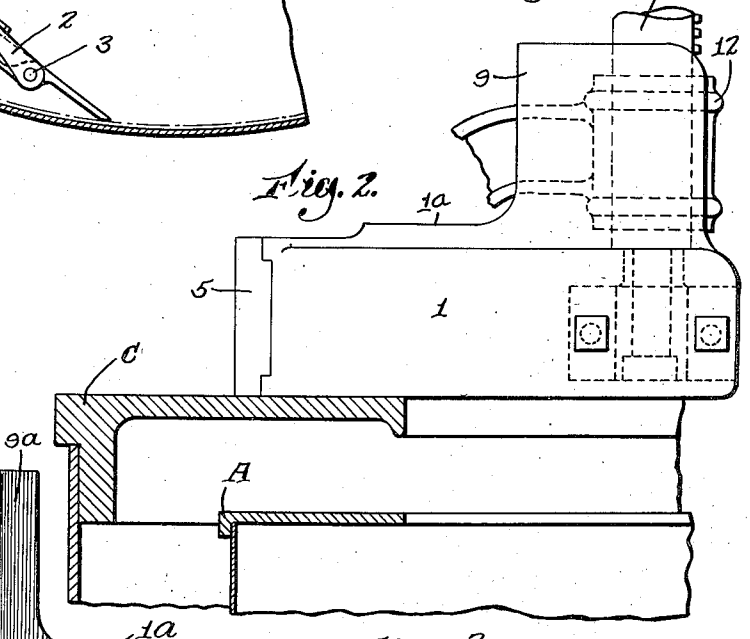
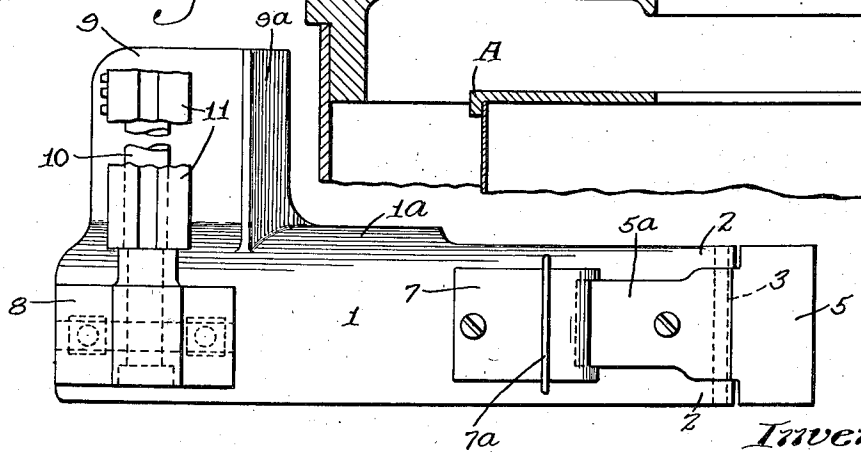


Fig. 1.



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CENTRIFUGAL DISCHARGER

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Application July 22, 1935, Serial No. 32,538

6 Claims. (Cl. 210—70)

This invention relates to discharging apparatus such as is used for unloading sugar and similar centrifugals and is intended to provide means for overcoming certain difficulties heretofore encountered in the operation of such discharging apparatus.

Sugar, and also other material treated in this type of centrifugal for extracting the mother liquor therefrom, is of a sticky nature and therefore tends to cling to the parts with which it forms contact as the walled up sugar in the centrifugal basket is being broken down by the discharger plow. It has been proposed to provide the discharger plow with an inwardly turned deflecting flange or lip at its upper edge to guide the loosened material toward the open central spider in the bottom of the centrifugal basket through which the discharge of material is effected, but this expedient has not in actual practice proved to be efficient or satisfactory for the purpose, since a substantial portion of the loosened material loosened by the plow drops upon or works over such deflector flange and acts to gum up the plow supporting and operating spindle and rack connected usually to the rear portion of the plow. The very bothersome gumming up of the plow spindle and its lifting rack is therefore not avoided so that the difficulty of operating the plow and the necessity of frequent washing of the rack and spindle and the overhead bearing support continues to cause trouble and extra labor, even when such a plow construction is used.

The present invention eliminates such clogging by providing a novel construction and arrangement which positively prevents any contact of the material being unloaded with the rack and spindle of the discharging apparatus. This is accomplished by a construction which provides a shield adjacent to, yet spaced from, the rack and spindle and projecting upward substantially above the plow shoe in overlapping relation to the lower portion of the rack, said shield comprising two angularly disposed portions meeting at an approximately vertical apex located some distance forwardly of the point of attachment of the plow to the spindle, so that any part of the loosened material overflowing the top of the plow shoe is deflected to the outside of the plow and is prevented from coming into contact with the rack and spindle. This and other features of the present invention will be described in the following specification and will be defined in the claims hereto annexed.

In the accompanying drawing I have illustrated a simple and convenient form of construction embodying the present improvement as applied to the type of discharger such as is disclosed in my pending application Serial No. 720,613 filed April 14, 1934.

In the drawing

Fig. 1 shows an elevation of my improved construction of plow as attached to its operating spindle and lifting rack, as viewed from the outside of the plow.

Fig. 2 shows an inside elevation of the plow when in raised or idle position resting on top of the centrifugal casing or curb.

Fig. 3 is a plan view of the same plow construction showing it in operative position for unloading the centrifugal when lowered inside of the basket.

Fig. 4 is a vertical section through the rear portion of the plow structure on the plane 4—4 of Fig. 3.

According to the usual practice, centrifugal dischargers of this type comprise an overhanging bracket or head, such as illustrated at 12 in Fig. 2, from which depends a supporting oscillatory spindle 10 associated with a lifting rack 11, the plow shoe 1 being suitably connected with the lower end of the spindle by any suitable attaching means, such as an attaching block 8, having splined connection with the spindle 10 to which block the rear end of the plow shoe 1 is firmly bolted. As is well known, while the centrifugal is in normal operation the plow is in its raised position and swung outward over the top of the curb or casing C, which surrounds the suspended centrifugal basket A. After the purging, washing and drying of the material has been completed, the centrifugal is then slowed down to a slow speed suitable for unloading the basket, the plow is swung inward about the spindle axis and is lowered into the basket by means of the rack 11 and an engaging pinion, which is not shown herein because that device is well known in the art. The plow with its cutting scraper is then manually operated to shear away the walled up material beginning at the top and lowering the plow as soon as the scraper has cut away the sugar to the line of the basket lining, the material being deflected through the openings in the spider that form the central supporting structure of the basket bottom B.

In this case the rigid plow shoe or blade 1 is provided at its top with an inwardly turned deflecting flange or lip 1^a, the flange extending from the forward part of the blade or shoe to the rear end thereof and increasing in width from front to rear.

As illustrated in my aforesaid copending application, the forward end of the plow shoe is provided with upper and lower vertically perforated ears or lugs 2 to receive the fulcral pin, which pivotally connects the thin edged scraper 5 to the plow shoe. A narrow tail or rearward extension 5^a of the scraper is provided with an inturned flange 5^b forming a stop for limiting the outward swing of the forward portion of the

cutting scraper. To limit to a very narrow range the inward pivotal movement of the forward end of the scraper, there is provided a stop screw 6 adjustably secured in the plow shoe and passing through an opening in the tail piece 5a of the scraper. The tail portion 5a is normally pressed inward until its stop member 5b engages the outside of the plow, this being effected by means of a leaf spring 7 pressing lightly against the rear end of the tail 5a. A keeper 7a serves to prevent undue outward displacement of the spring 7 and is in the form of a U-shaped bail secured to the plow shoe.

Now as the material becomes loosened by the action of the plow, the major part of it is deflected into the central spider and discharged but a considerable portion of the loosened sugar will either overflow the top of the plow or will fall upon it and this portion of the material, even with the inturned deflector 1a, will be carried into contact with the rack and spindle. This results in gumming up both these parts so that their action becomes clogged or impeded so that it becomes necessary to wash them off as well as the bearing in the overhanging arm 12. To prevent this I provide a shield in the form of an upwardly projecting extension 9, which is carried up high enough to prevent the overflow of the loosened material adjacent to the point of attachment of the plow to the spindle. This inwardly offset, upwardly projecting shield is provided with an angular extension 9a extending across the width of the plow shoe structure and forming a sharp angled apex well in advance of the point of attachment of the plow to the spindle. With this construction it has been demonstrated that the loosened material deflected along the inside of the plow cannot overflow outwardly, while the angular extension 9a prevents the loosened material, that overflows the top of the forward portion of the plow, from coming in contact with the spindle or rack since its angular arrangement deflects such overflowing material to the outside of the plow. This angular shield presents a vertical apex that cuts through the overflowing sugar, sending one part toward the discharge opening in the bottom and the other portion to the outside of the plow. It is sufficiently offset or spaced from the spindle and rack to avoid striking against the overhanging discharger supporting arm 12 so that it does not prevent the lifting of the plow to the required height permitting it to be swung outward over the curb to its idle position.

This arrangement forms a complete and satisfactory preventive against the gumming and clogging of the rack and spindle so that the operation of the plow is no longer impeded by the accumulation of material on the operating parts and the frequent washing of these parts to keep them clear is eliminated.

What I claim is:

1. In a discharger device for unloading a centrifugal basket the combination of a horizontally disposed plow, plow supporting and operating means comprising a lifting rack and spindle suitably connected with the rear portion of the plow, means for protecting the rack and spindle from contact with the loosened material comprising a deflector extended upwardly a substantial distance above the plow to overlap the rack and spindle, said deflector comprising two angularly disposed portions whose apex extends upward forwardly of the spindle whereby material overflowing the top of the plow is deflected to the outside of the plow.

2. In a discharger device for unloading centrifugals the combination with a vertical plow supporting and operating spindle associated with a lifting rack, of a horizontally disposed plow whose rearward portion is secured to said spindle, said plow being provided with an inwardly offset, upwardly projecting shield spaced from and overlapping the rack and spindle and having a transverse angular extension presenting a vertical apex forwardly of the attaching point of the spindle whereby the material loosened from the plow is deflected partly toward the center of the basket and in part to the outside of the plow.

3. A discharger plow for a centrifugal adapted to be operatively connected at its rear portion with a lifting and actuating spindle, said plow having along its top edge an inturned deflector flange, the rear portion of said flange being provided with an upwardly projecting shield for preventing overflow of the material into contact with the lifting spindle, said shield comprising two angularly disposed portions whose forwardly disposed apex acts to deflect material to opposite sides of the plow.

4. A discharger plow for unloading a centrifugal embracing a rigid plow shoe provided at its forward end with a cutting scraper and provided at its rear end with means for attaching it to plow operating means, said plow shoe having along its top edge an inturned flange for deflecting the loosened material toward the interior of the basket, and an upwardly projecting shield inwardly offset and spaced from the outer face of the plow and having at its forward end a transverse obliquely extending portion arranged to deflect material overflowing the forward portion of the plow to the outside of the plow.

5. A discharger plow for unloading a centrifugal provided at its rear portion with means for attaching it to supporting and operating means, and a protective shield projecting upward a substantial distance above the top of the plow and comprising two angularly disposed members, one of which is inwardly offset from the body of the plow and the other of which extends obliquely across the plow and forms an acute angle juncture with the forward portion of the other member thereby preventing contact of the loosened material with the plow supporting and operating means.

6. A discharger plow for unloading a centrifugal provided at its rear end with means for attaching it to supporting and operating means, a scraper blade pivotally connected intermediate of its ends with the forward end of the plow shoe, the rearward portion of said scraper blade being provided with an inturned lip adapted to abut against the outside face of the plow shoe to limit the outward movement of the scraper edge, an oppositely acting stop member for limiting the inward movement of the scraper tip to a narrow range, a leaf spring secured to the plow to yieldingly press the rear portion of the scraper against the plow shoe, and means for restricting the outward movement of said leaf spring.

EUGENE ROBERTS.